

**CLAIMS:**

1. A rewritable optical data storage medium (20) for high-speed recording by means of a focused radiation beam (10), said medium comprising a substrate (7) carrying a stack (2) of layers, which stack comprises, a substantially transparent first auxiliary layer I1 (3), a substantially transparent second auxiliary layer I2 (5) having a thickness  $d_{I2}$ , and a recording layer (4) of a phase-change material comprising a composition  $Ge_xSn_ySb_{1-x-y}$ , where  $0.05 < x < 0.30$  and  $0.15 < y < 0.30$ , which recording layer is interposed between I1 and I2, and a third auxiliary layer I3 (6) with a thickness  $d_{I3}$  acting as a heat sink and being present at a side of I2 opposite to the side of the recording layer, characterized in that  $\lambda_{I2}/d_{I2} > 5 \cdot 10^8 \text{ W m}^{-2} \text{ K}^{-1}$ , in which formula  $\lambda_{I2}$  is the heat conduction coefficient of the material of the I2 layer.
2. An optical data storage medium (20) as claimed in Claim 1, wherein the second auxiliary layer I2 mainly comprises  $(ZnS)_{80}(SiO_2)_{20}$  and  $d_{I2} < 10 \text{ nm}$ .
3. An optical data storage medium (20) as claimed in Claim 1, wherein the second auxiliary layer I2 comprises at least one selected from the group of  $Ge_3N_4$ ,  $Si_3N_4$ ,  $Al_2O_3$ ,  $Hf_xN_y$ , ITO ( $In_2O_3:Sn$ ) and  $Ta_2O_5$ .
4. An optical data storage medium (20) as claimed in any one of Claims 1, 2 or 3, wherein the recording layer (4) has a thickness  $d_P$  and  $d_P$  is smaller than 15 nm.
5. An optical data storage medium (20) as claimed in any one of Claims 1, 2, 3 or 4, wherein the recording layer additionally comprises at least one selected from In, Ag or Cu.
6. An optical data storage medium (20) as claimed in Claim 5, wherein the at least one is present in a concentration up to 10 at.%.

7. An optical data storage medium (20) as claimed in Claim 1, wherein the third auxiliary layer I3 mainly comprises Ag.
8. An optical data storage medium (20) as claimed in Claim 7, wherein the thickness  $d_{13}$  of the third auxiliary layer I3 is at least 150 nm.
9. An optical data storage medium (20) as claimed in any one of Claims 1 to 8, wherein a substantially transparent fourth auxiliary layer I4 (8) is present between the third auxiliary layer I3 (6) and the second auxiliary layer I2 (5) screening the third auxiliary layer I3 from a chemical influence of the second auxiliary layer I2.
10. An optical data storage medium as claimed in Claim 9, wherein the fourth auxiliary layer I4 (8) comprises at least one of  $\text{Si}_3\text{N}_4$  or  $\text{Ge}_3\text{N}_4$ .
- 15 11. An optical data storage medium as claimed in Claim 10, wherein the fourth auxiliary layer I4 has a thickness  $d_{14} \leq 3$  nm.
12. Use of an optical data storage medium (20) according to any one of the preceding Claims for high speed recording with a recording speed of at least 35 m/s.